


Psychological Aspects of Bioterrorism

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Stress

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Psychological Goals of Terrorism

- Erode sense of national security
- Disrupt the continuity of society
- Destroy social capital
 - Morale
 - Cohesion
 - Shared Values

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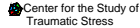
Terrorism

- Opens the fault lines, the potential cracks in our society
 - Racial/ethnic
 - Economic
 - Religious

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The Nation's Security

Military Power
Economic Power
Information Systems
Health



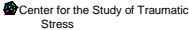
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Characteristics of Traumatic Events

Individuals Exposed

Intentional
assault
robbery
rape

Unintentional
accident
MVA
injury



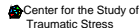
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Characteristics of Traumatic Events

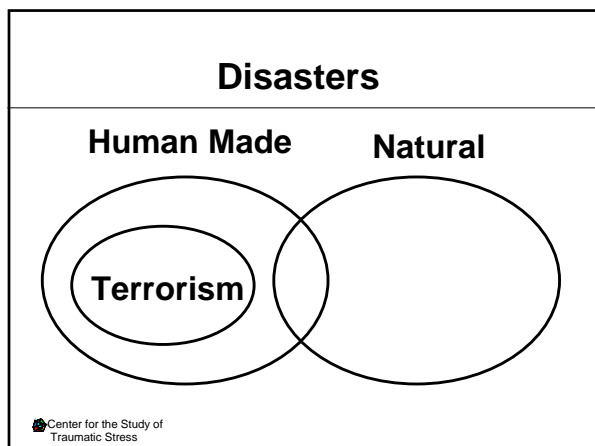
Communities/
Populations Exposed

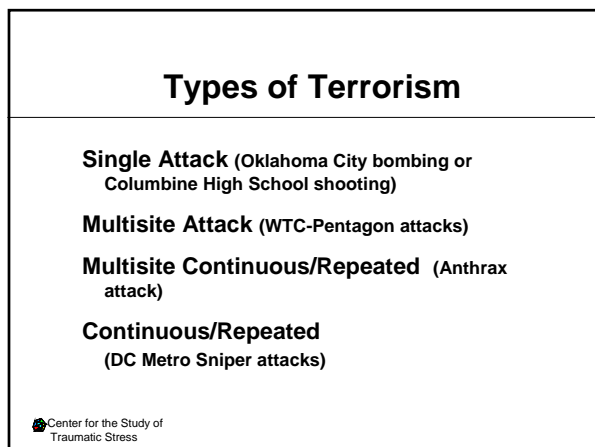
Human Made
industrial acc.
plane crash
toxic exposure

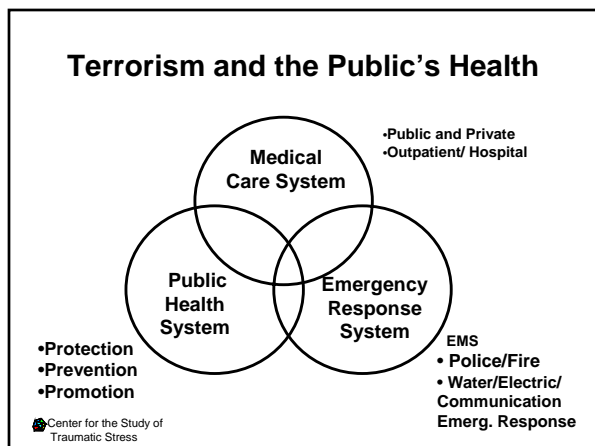
Natural
hurricane
earthquake
tornado



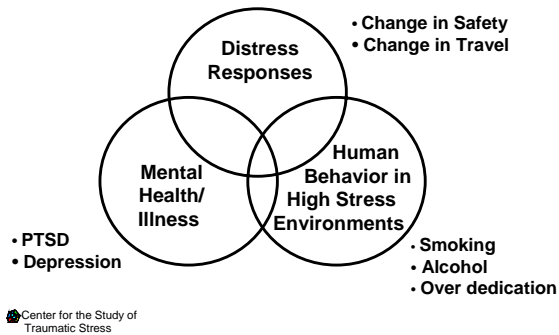
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Mental Health in Disaster and Terrorism



Haddon Matrix

| | | | |
|---------------|---------------|----------------|--------------------|
| | Agent: | Vector: | Population: |
| | Malaria | Mosquito | Person |
| Pre | | | |
| During | | | |
| Post | | | |

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Psychological and Behavioral Intervention Matrix (Bio)

| | | | |
|---------------|--|--------------------|--|
| | Agent: | Vector: | Population: |
| | Anthrax/Terror | Terror/Mail | Person |
| Pre | Premedication Vaccination Air detection system | Airport Screening | Preparedness Behaviors Participation in Vaccination Information/plan. |
| During | Specific medical rx Supportive rx Masks/Cover | Security Detectors | Disaster Behaviors: Quarantine Evacuation Grief Leadership |
| Post | Rehabilitation | Justice system | Response/Recovery Behaviors Help seeking Specific Rx's |

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Ionizing Radiation Psychological and Behavioral Intervention Matrix

| | Agent: Rad. /Terror | Vector: Terrorist | Population: Person |
|---------------|--|-----------------------|---|
| Pre | Prepositioning Iodide Detectors | Airport Screening | Preparedness Behaviors Alert training Information/plan. |
| During | Protected Buildings Protective Clothing | Security Detectors | Disaster Behaviors: Evacuation Shelter in Place Grief Leadership |
| Post | Decontamination | Justice system | Response/ Recovery Behaviors Help seeking Specific Rx's Primary Care |

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Psychological and Behavioral Intervention Matrix (WTC)

| | Agent: Blast/Terror | Vector: Terrorst /Truck | Population: Person |
|---------------|---|--|---|
| Pre | Modify Building design | Airport Screening | Preparedness Behaviors Risk Assessment Information/plan. |
| During | Sprinkler system Firefighter Response | Harden CP Door Passenger active coping | Disaster Behaviors: Escape/Rescue Evacuation |
| Post | Emergency Response System | Justice system | Response/Recovery Behaviors Specific Rx's Screening Parent-Teacher Ed |

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World Trade Center Explosion February 26, 1993 (March 1993 Survey)

- 76% thought something serious had happened
- 32% had not begun to evacuate by one hour
- 30% decided not to evacuate
- 36% participated in a previous emergency evacuation

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**World Trade Center Explosion
February 26, 1993
(March 1993 Survey)**

- Crowds inhibit individual solutions in favor of shared norm, esp. if members known
- Large groups take longer
- Social relationships effect response
- Smoke, injury speed evacuation
- Higher in building, slower the response

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Acute Event Scene Responses


- Most search and rescue is done by bystanders (50%)
- Majority of casualties are not transported by ambulance (cars, taxi, walk, police)
- Least serious casualties arrive first at the closest hospital
- 80-95% of casualties are not admitted to the hospital and most need treatment for non-traumatic injury

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Aud der Heide, 2002 /
Quarenteli 1983

**Loss of Access to Routine Medical
Care and Home Care**

- Hurricane Andrew: 1000 Physician Offices, 4 Mental Health Facilities, 11 pharmacies, 7 Convalescent Homes, 2 Dialysis Units, 38 Assisted-living Facilities
- Home health care: Nursing, Oxygen, suction, IV antibiotics, medication, ventilation, chemotherapy
- Therefore, chronic medical conditions worsen and care is sought at already overburdened hospitals

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Aud der Heide, 2002 /
Sabatino JAHA 1992


Post-Traumatic Stress Disorder (PTSD)

PTSD not uncommon after many types of traumatic events

- Examples: Motor vehicle accidents and industrial explosions


Nearly all have the acute form at some point

- Can develop in people without psychiatric history
- Rapid recovery is the norm

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Other Trauma-Related Disorders

- Traumatic grief
- Unexplained somatic symptoms
- Depression
- Sleep disturbances
- Increased use of alcohol and cigarettes
- Increased family violence and conflict

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Oklahoma City Terrorist Attack (at 6 months)

- 34% PTSD
- 25% Depression
- 40% Never experienced psychiatric problems in the past

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North et. al., JAMA 1999

Stress Reactions After 9/11 Terrorist Attacks

Nationally representative sample N=560
3-5 days after attack

44% Report one or more substantial
stress symptoms

90% Report at least low levels of stress

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Schuster et. al., 2001

Stress Reactions After 9/11 Terrorist Attacks (2)


Nationally representative sample N=560
3-5 days after attack

Substantial Stress Reaction

Female (50% - 1.35 relative risk)

Less than 100 mi. (61% - 1.69 > 1000 mi.)


TV viewing 9/11 greater than 12 hrs.
(58% - 1.57 > 0 to 3 hrs.)

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Schuster et. al., 2001

Those With No Previous Psychiatric Illness Are At Risk

- Oklahoma City near Murrah Building
- (DIS study)
- USAF POWs returning from Vietnam
- Twin studies of Vietnam Combat Veterans

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North et al Jama 1999 / Ursano et al AJP 1981 /
Goldberg et al Arch Gen Psych 1984

Somatic Symptoms

- Frequently increased following disasters
- Can be an expression of anxiety or depression and leads to the seeking of health care
- MUPS or MIPS
(Multiple Unexplained or Idiopathic Physical Symptoms)

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Ursano, Fullerton et al 1995/
McCarroll, Ursano, Fullerton et
al Psychosomatics 2000

Estimated Mental Health Needs in NY State after Sept 11

Expos Group (pop) %PTSD #Case %Seek Treatment

| | | | | |
|----------------------------|--------------|----------------|--------------|----------------|
| WTC area (162,715) | 25% | 41,562 | 50 % | 20,615 |
| Manhattan (919,000) | 10% | 91,900 | 28 % | 20,586 |
| All 5 NYC Burs. (6.92 mil) | 5% | 346,328 | 28 % | 77,577 |
| Nearby counties(4.8mil) | 1% | 48,000 | 28 % | 10,752 |
| TOTAL | 4.5 % | 527,790 | 24.5% | 129,530 |

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Herman et al JUH
2002

National Study of Reactions to Terrorist Attack 1-2 months post 9/11 (N=2273)

Probable PTSD

| | |
|-------------------|-------|
| New York City | 11.2% |
| Washington DC | 2.7% |
| Other Metro Areas | 3.6% |
| Rest of USA | 4.0% |


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Schlinger et. al., JAMA 2002

**PTSD & Increased Alcohol Use in Pentagon
Attack Survivors
7 Months (N=77)**

Exposure

- 70.1% Saw, heard, felt, or smelled the aircraft, explosion, or fire
- 32.5% Feared death
- 13% Experience difficulty with evacuation
- 10% Saw someone die


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Grieger, Fullerton, & Ursano
2003

**Longitudinal National Study of
Reactions to Terrorist Attack**

2 weeks (N=2,729), 2 months (N=933)
6 months (N=787)

| <u>Outside of NYC</u> | <u>2 mos.</u> | <u>6 mos.</u> |
|---------------------------|---------------|---------------|
| Fears of Future Terrorism | 64.6% | 37.5% |
| Fear of Harm to Family | 59.5% | 40.6% |


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Silver et. al., JAMA 2002

**Longitudinal National Study of
Reactions to Terrorist Attack**

2 weeks (N=2,729), 2 months (N=933)
6 months (N=787)

| <u>Outside of NYC</u> | <u>2 mos.</u> | <u>6 mos.</u> |
|---------------------------|---------------|---------------|
| 9/11 Posttraumatic Stress | 17.0% | 5.8% |

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Silver et. al., JAMA 2002


Terrorism Effects

Perceived safety
Confidence in government
Stigmatization


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Depression

- May be a primary factor in traumatized patients who are reclusive or difficult to treat
- Requires evaluation and treatment


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Traumatic Grief / Bereavement

- Not uncommon following traumatic events
- Often overlooked in some groups
(e.g., parents of adult children who die unexpectedly)
- May adversely affect social interaction


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Family Conflict


- **Common following a traumatic event**
- **Triggered by fear of new threats**
(e.g., loss of safety, economic impacts, potential loss of job)

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Intervention After Disasters

- **Assure Basic Needs**
- **Psychological First Aid**
- **Needs Assessment**
- **Monitor the Recovery Environment**
- **Outreach/Information Dissemination**
- **Fostering Resiliency/Recovery**
- **Consultation/Technical Assistance**
- **Triage**
- **Treatment**




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Workplace Needs

- **Distress management**
- **Shelter in place**
- **Support for continuity of operations centers/leaders ("Site R")**
- **Grief leadership**
- **Evacuation leadership**
- **Centralized locator offsite**
- **Travel policies**


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Media

Can serve to supply disturbing information
& propagate distress


Can be a tool for:

- Education
- Recovery
- Providing empathy with victims

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Leaders Working with the Media

- Decrease exposure
- Less disturbing pictures and stories
- Information may carry different meanings

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Preventive Mental Health

Drink lots of OJ
Eat your bread crusts
Be kind to your neighbors
Think cool thoughts
Jangle gently as you go
Avoid vexatious and disputatious folk

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Resources:

**Center for the Study of Traumatic
Stress web-site:**

<http://www.USUHS.Mil/psy/traumaticstress/newcenter.html>

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Resources continued:

Terrorism and Disaster


Ursano, RJ, Fullerton CS, Norwood, AE
Cambridge University Press, 2003

Preparing for the Psychological

Consequences of Terrorism:

A Public Health Strategy

The National Academies Press, 2003

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